

REMARKS

Claims 2, 5 – 9, 15 – 25, 51 and 57 - 67 are pending in the present Application. No claims have been cancelled, Claim 9 has been amended, and no claims have been added, Claims 18 and 19 have been allowed, leaving Claims 2, 5-9, 15-17, 20-25, 51 and 57-67 for consideration upon entry of the present Amendment.

Claim 9 has been amended to correct a typographical error and thereby correctly place it in independent form.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 2, 5 – 8, 20, 21 and 57 – 67 stand rejected under 35 U.S.C. §103(a), as allegedly unpatentable over U.S. Patent No. 6,030,718 to Fuglevand et al. in view of U.S. Patent No. 5,641,586 to Wilson in view of International Publication No. WO 00/39363 A1 to Speranza et al. Applicants respectfully traverse this rejection.

The Examiner concedes that Fuglevand et al. fail to teach that the porous supports comprise metal screens or sintered metal cloths as recited in Claim 21, or that the supports are made of Nb, Zr, Ta, Ti, steel, Ni, CO and mixtures and alloys thereof as recited in Claims 8 and 21. (Office Action dated May 8, 2006, hereinafter “05/06”, page 3) Therefore, Wilson is relied upon to teach porous supports comprising metal screens or sintered metal cloths and Speranza et al. are relied upon to teach “[t]he screen functions as a gas diffusion member... is made of Nb, Ni, Co, Zr, Ti, or steel.” (OA 05/06, pages 3, 4)

The Examiner alleges that Wilson teaches that “metal screens and cloths are functionally equivalent to carbon cloths”. (05/06, page 3) However, Wilson states that “[o]ther possible porous structures include carbon or metal foams, sintered particles, and woven or non-woven metal screens” but fails to provide teaching or suggestion that these elements are functionally equivalent to the carbon cloth taught by Fuglevand. As such, there is no motivation to combine the “possible porous structures” with the fuel cell disclosed by Fuglevand et al. (Wilson, Col. 5, lines 10-12)

Section 103 sets out the test for obviousness determinations. It states, in pertinent part, that such determinations are to be made by consideration of

... the differences between subject matter sought to be patented and the prior art such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the [pertinent] art.

In making a Section 103 rejection, the Examiner bears the burden of establishing a *prima facie* case of obviousness. *In re Fine*, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1998). The Examiner

“... can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in art would lead that individual to combine the relevant teachings of the references”. *Id.*

Here, the Examiner relies on an unsupported assumption, namely that “metal screens and cloths are functionally equivalent to carbon cloths when used in porous current-collecting members for fuel cells” (OA 05/06, page 3) when in fact, Wilson in no way teaches that carbon cloth and metal screens are functionally equivalent. Instead, Wilson teaches that different designs have different properties. While Wilson mentions possible porous structures (other than carbon), he specifically teaches the use of carbon paper; “structures described herein typically form the macroporous flow-field from resin bonded carbon paper...”. (Col. 5, lines 6 – 8) Merely the disclosure of a list of items that *could* be used in a particular invention (e.g. possible flow fields in Wilson) is not an affirmation that the elements of the list are equivalent or even that they are preferred.

The Examiner concedes that the reference does not expressly identify these as functional equivalents (OA 05/06, page 7); however, he contends that the skilled artisan would recognize them to function as equivalents since they are both electrically conductive, porous structures. The Applicants respectfully disagree with this contention. The mere fact that elements are both electrically conductive and have porous structures does not indicate that they function as equivalents, and artisans would not conclude that they are “functional equivalents”. For example, different elements have distinct properties, e.g., the electrical conductivity of carbon is orders of magnitude different than the electrical conductivity of niobium. Hence, an artisan would not expect that a porous structure formed from carbon would be “functionally equivalent” to a porous structure formed from niobium. Possible alternatives are often provided in patents.

However, provision of possible alternatives is not even a teaching that the inventor has even tried all of the alternatives, and certainly is not a teaching of equivalence; functional or otherwise.

Fuglevand et al. merely disclose carbon cloth, carbon paper or carbon sponge and specifically disclose a method of forming the diffusion layers that comprise carbon. There is no indication, teaching, or suggestion that the diffusion layers could comprise a perforated sheet, a pierced sheet, a sintered metal cloth, an etched sheet, a felt, or a woven mesh as disclosed by Applicants. To attain the present claims, as noted above, Wilson is relied upon to teach that “metal screens and cloths are functionally equivalent to carbon cloths”. (05/06, page 3)

Again, obviousness is not based upon what an artisan may do or might try, but is based upon what an artisan would be motivated to do with an expectation of success. However, in the present case, motivation for combining Fuglevand et al. and Wilson is allegedly unnecessary because “[a]n express suggestion to substitute one equivalent component or process for another is not necessary...”. (OA 05/06, page 4) This alleged alternative to motivation is based upon the false assumption that Wilson teaches the equivalence of carbon cloths and metal cloths. The mere conclusory statement that because the elements are in a common list in Wilson, they are equivalents, is not support for such a contention. Hence, no “functional equivalence” has been taught, and motivation to combine, with an expectation of success, is required to establish a proper, *prima facie* case of obviousness. Here, no *prima facie* case of obviousness has been established.

It is also alleged that sintering of the support would be obvious as fairly suggested by Wilson’s mention of “sintered particles”. It is first noted that if Wilson intended to teach sintered metal cloth (as alleged in the OA 05/06), and Wilson specifically mentioned “sintered” in relation to the particles, wouldn’t Wilson have also mentioned “sintered” in relation to the metal cloth? Wouldn’t failure to mention sintering in one instance and not the other be an indication of failure to teach the sintering in the non-mentioned instance? Additionally, if all of the elements of the list were equivalents (as alleged in OA 05/06), wouldn’t the carbon paper also be “sinterable” to “increase the structural integrity”? (OA 05/06, page 4) However, won’t carbon degrade if sintered? Isn’t carbon often used as a fugitive material? How can it be sintered? Applicants contend that there is no teaching of equivalence between the members of the list of Wilson, that there is no motivation to sinter the metal cloth, and that there is therefore no

motivation to combine the “chosen” element of Wilson into Fuglevand et al., and there is no expectation of success. No *prima facie* case of obviousness has been established.

With respect to Speranza et al, this reference is relied upon to allegedly teach the electrically conductive material as claimed by Applicants. However, regardless of whether Speranza et al. teach the specific materials of Applicants claims, they fail to cure the deficiencies of Wilson and Fuglevand et al. Additionally, merely because Speranza et al. disclose a material is not motivation to take that material and use it in another case that states ; “structures described herein typically form the macroporous flow-field from resin bonded carbon paper...”. (Wilson, Col. 5, lines 6 – 8) Obviousness requires both motivation and expectation of success. Obviousness is not based upon what an artisan “could do” or what an artisan “may try”, but is based upon what an artisan would be motivated to do with an expectation of success. The Examiner cannot merely pick and choose elements from various references to attain the claimed invention; “[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, No. 04-1616 (CAFC March 22, 2006) citing *In re Lee*, 277 F.3d 1338, 1343-46 (Fed. Cir. 2002); and *In re Rouffett*, 149 F.3d 1350, 1355-59 (Fed. Cir. 1998).

Here, the Examiner has provided no motivation to combine the materials of the screen/frame of Speranza et al. with the flow field member of Wilson and the fuel cell of Fuglevand et al. He relies on a merely conclusory statement, i.e. that “the artisan would be motivated to use the materials of Speranza et al. in the flow field members of Wilson” and that “the disclosure of Speranza et al. indicates...suitable materials for use as flow field members”. Merely stating that the materials can be used as possible screen materials does not provide motivation for an artisan to use the materials in Wilson, especially where Wilson states that they typically use bonded carbon paper. No articulated statement of motivation has been provided and as such no conclusion of obviousness can be made.

Since the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art, i.e., that the prior art relied upon must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references, and that the proposed modification of the prior art must have had a

reasonable expectation of success, and since that burden has not been met, no *prima facie* case of obviousness has been established. Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 15, 22 – 25 and 51 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Fuglevand, et al., in view of International Publication No. WO 97/13287 to Mussell et al. Applicants respectfully traverse this rejection.

The Examiner concedes that Fuglevand et al. fail to teach that the “layers each have a different porosity”. (Claims 15, 22, 51; OA 05/06, page 5). Therefore, the Examiner relies on Mussel et al. to teach a first layer having a first porosity and a second layer having a second, different porosity.

While the Examiner contends that an artisan would be motivated to vary the porosity across the plurality of layers of Fuglevand et al. because the invention disclosed by Mussel et al. can

operate at a high current density at a relatively high voltage, have a relatively high power density and provide a high power density even when operated under relatively low gas pressures

(OA 05/06, page 6), Applicants still maintain that there is no motivation to combine Mussel et al. with Fuglevand et al. In response to Applicants arguments, the Examiner contends that the “obvious to try” rationale “is not believed to be the case here.” (OA 05/06, page 8) However Applicants maintain that Fuglevand et al. specifically teach that “...a noncatalytic electrically conductive diffusion layer 170...has a given porosity.” (Col. 9, lines 32-25) This clearly fails to state multiple porosities. There is no motivation to change these specific teachings of these references. Since each reference specifically teaches a desired design, there is no motivation or expectation of success to ignore that references’ teaching for a teaching of another reference. The standard is what an artisan would be motivated to do with an expectation of success based upon the teachings of the prior art. The requirement for a determination of obviousness is that “both the suggestion and the expectation of success must be founded in the prior art, not in Applicant’s disclosure”. *In re Dow Chem.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988).

An Examiner, then, cannot base a determination of obviousness on what the skilled person in the art might try or find obvious to try. Rather, the proper test requires determining what the prior art would have led the skilled person to do. There is no motivation to pick the different porosities disclosed by Mussel et al. and apply them to the diffusion layers disclosed by Fuglevand et al. Therefore, there is clearly no expectation of success and as such, Mussel et al. when taken with Fuglevand et al. fail to establish a *prima facie* case of obviousness. Reconsideration and withdrawal of this rejection are respectfully requested.

Claims 16 and 17 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Fuglevand, et al., in view of Mussell, et al. and further in view of U. S. Patent No. 5,641,586 to Wilson. Applicants respectfully traverse this rejection.

The Examiner concedes that Fuglevand does not expressly teach that porous supports comprise metal screens or sintered metal cloths as claimed by Applicants (Claims 16, 17). (OA 05/06, page 7) Therefore, the Examiner relies upon Wilson '586 to teach or "fairly suggest" metal screens and sintered metal cloths as supports in porous members for fuel cells.

Applicants first note that, Claims 16 and 17 are dependent claims to patentable Claim 15, as discussed above, and are by definition, allowable. Additionally, as discussed above, a screen and a sintered metal cloth are not functional equivalents of a carbon cloth, paper or sponge. Merely the fact that the elements are conductive and porous does not indicate that they are functionally equivalent. Furthermore, specifically regarding Claim 17, Wilson fails to specifically teach sintered metal cloth and instead only teaches "sintered particles", "woven or non-woven metal screens" or "carbon or metal foams". (Col. 5, lines 9-12). For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927

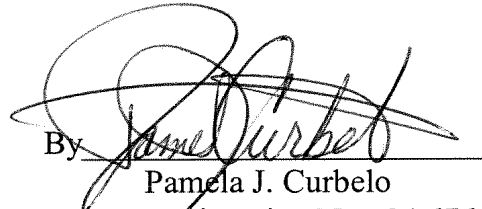
U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996). For at least the reasons set forth above, no motivation, suggestion or teaching has been specifically articulated. Hence, no prima facie case of obviousness has been established. Reconsideration and withdrawal of this rejection are respectfully requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the rejections and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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